ASSESSMENT OF THE HEALTH STATUS OF PRIMARY SCHOOL CHILDREN PARTICIPATING IN SCHOOL FEEDING PROGRAM IN NUSA TENGGARA BARAT AND NUSA TENGGARA TIMUR, INDONESIA

Dwi Susilowati and **Siti Sundari**[1]

ABSTRACT

Background: *School feeding program provided vital nourishment for students, improved their health and school attendance.* ***Objective:*** *To investigate the effects of provision of food distributed at targeted primary schools. To measure the change of anemia prevalence rate, to assess the prevalence of some illness and to assess related knowledge and practices of health, nutrition and hygiene among primary school students.* ***Methods:*** *The sample was randomly selected from 30 clusters of primary schools who received WFP food supplement for at least 6 months in Nusa Tenggara Barat (NTB) and Nusa Tenggara Timur (NTT) provinces during the year 2008. The sample was calculated on the basis of the formula of a single cross-sectional survey comparing two sub-groups. The data was analyzed by using SPSS for Windows version 15.* ***Results:*** *The head of households, whom mostly males, worked as unskilled agricultural wage labors and vendor of agricultural products. The education of parents was generally low. Most of them lived in single house and used latrine. The mean hemoglobin of students was 11.8 gr/ dl (SD 1.3; CI (11.7–11.9)). The anemia prevalence rate was 37.6%, it was 25.8% higher as compared to previous year. There were significant decreased of morbidity rates of diarrhea, Acute Respiratory Infection and fever as compared to previous years. Practice in hygiene as indicated by drinking boiled water, showed a decreased in coverage in the previous years. However, hand washing before meals was increased steadily while hand washing after defecation was decreased. There were more household used latrines.*

Key words: *school feeding, primary school children, anemia, knowledge attitude and practice*

ABSTRAK

Latar belakang: Program pemberian makanan di sekolah menyediakan makanan penting bagi siswa, meningkatkan kesehatan, dan kehadiran siswa di sekolah. Untuk meneliti penyediaan makanan yang didistribusikan di sekolah dasar yang ditargetkan, mengukur perubahan tingkat anemia prevalensi, menilai prevalensi beberapa penyakit, dan menilai pengetahuan dan praktik kesehatan, gizi dan kebersihan di kalangan siswa sekolah dasar. Metode: Sampel dipilih secara acak untuk kelompok sekolah dasar yang menerima makanan tambahan WFP selama minimal 6 bulan di Provinsi Nusa Tenggara Barat (NTB) dan Nusa Tenggara Timur (NTT) pada tahun 2008. Sampel dihitung berdasarkan rumus suatu survei cross-sectional tunggal membandingkan dua sub-kelompok. Data analisis dengan menggunakan SPSS untuk versi windows 15. Hasil: Kepala rumah tangga yang kebanyakan laki-laki bekerja sebagai tenaga kerja tidak terampil upah pertanian dan produk pertanian. Pendidikan orang tua pada umumnya rendah. Sebagian besar dari mereka tinggal di rumah tunggal dan menggunakan jamban.Hemoglobin rata-rata siswa adalah 11,8 gr/dl (SD 1,3; CL (11,9). Tingkat prevalensi anemia sebesar 37,6%, 25,8% lebih tinggi dibandingkan tahun sebelumnya, dengan demikian berarti ada penurunan tingkat morbiditas diare, infeksi pernapasan acte dan demam yang signifikan dibanding tahun-tahun sebelumnya. Praktik kebersihan untuk mengkonsumsi minum air matang menunjukkan penurunan cakupan dari tahun-tahun sebelumnya. Namun mencuci tangan sebelum makan terus meningkat, sedangkan mencuci tangan setelah buang air besar mengalami penurunan karena pada rumah tangga hanya menggunakan kakus.

Kata kunci: *pemberian makanan di sekolah, anak-anak sekolah dasar, anemia, pengetahuan, sikap dan praktik*

Submit: 21 April 2010, Review 1: 23 April 2010, Review 2: 23 April 2010, Eligible articles: 5 Mei 2010

---

[1] The authors are researchers at Center for Health System and Public Research and Development. National Institute of Health Research and Development (NIHRD), Ministry of Health (MoH), Republic of Indonesia
Correspondence: E-mail: dwisusi@yahoo.com. Mobile: 0816 1393045

INTRODUCTION

School feeding programs provide vital nourishment, it perform as a safety net for poor families and help keep children in school. Having a full stomach also helps them to concentrate better on their lessons. In many cases the programs have a strong gender dimension, especially when they target girls' education (Gelli A, 2007). Early malnutrition and/or micronutrient deficiencies can negatively affect in many aspects for child health and development. It improved their physical, mental and psychosocial health (Kristjansson B, 2007).

Since April 2004, World Food Program (WFP) Indonesia has been implementing a program namely School Feeding Program (SF) for poor and food insecure areas with high food insecurity and malnutrition rates in several areas in Indonesia. The main objective of the program is to reduce micronutrient deficiencies, especially anemia and improve health and nutrition related behaviors among students. The SF Program aims to improve school attendance and students' concentration and learning capacity. It provides fortified biscuits to primary school students. Such biscuits are fortified with 9 vitamins (vitamin A, vitamin B1, Vitamin B2, Vitamin B6, Vitamin B12, Vitamin D, Vitamin E, Niacin and Folic Acid) and 5 minerals (Iron/Fe, Zinc, Iodine, Selenium, Calcium) and locally produced upon approval of the Ministry of Health and National Food and Drug Control Agency (BPOM). Of equal importance, health and nutrition education are also provided to beneficiaries to ensure the longer-term impact of food aid on nutritional status.

The objective of the study were to measure the change in anemia prevalence rate among primary school students, to assess the prevalence of diarrhea and Acute Respiratory Infections (ARIs) among primary school students, and to assess related knowledge and practices of health, nutrition and hygiene of school students.

METHODS

The survey was a cross sectional survey (Coggon, 1997). The subjects under survey were current WFP targeted beneficiaries i.e.: primary school students, grade 1–6, that were randomly selected from 30 clusters of elementary school who participated in SF programs in NTB province (Central, West, East Lombok districts) and NTT province (Kupang City, Kupang districts, Timor Tengah Selatan, and Belu districts). From each school clusters, 23 elementary school children were randomly selected to assess their hemoglobin concentration and 10 elementary school children of grade 4–6 were randomly selected for their knowledge, attitude and practice (KAP) related to SF program. The questions related to KAP were integrated into the general survey questionnaires. The indicators were used to measure the changes of each group that consisted of hemoglobin concentration, illness reported within the past two weeks, i.e.: diarrhea, ARI, malaria and KAP of school children.

Biochemical assessment. The hemoglobin assessment was performed in legal artist by well trained paramedics through finger prick blood sample whereas hemoglobin values were obtained using Hemocue photometer type Hb 201+ (Akhtar B, 2008). Every morning prior to use, the Hemocues were calibrated with standard solution (Hemotrol) with known hemoglobin concentration (low, medium, high) to check the reliability of equipment. In addition, an internal standard (standard cuvette) was employed in every 10 samples for each Hemocue.

Physical diagnosis was done in order to observe ARI, diarrhea and malaria. Anemia standard use WHO reference (WHO, 2001). Children age 5–11 years the cut off is 11.5 g/dL. Children aged 12–15 years the cut of is 12 g/dL. Quantitative data including household data, socio-economic and demographic status of parents, including supportive data were collected through structured questioners and in addition, qualitative information were collected through Focus Group Discussion (FGD) and direct observations to support quantitative data. FGDs for SF Program involved teachers, UKS (School Health Unit) teachers, headmasters, school committee, guardians and nutritionist from Puskesmas. Semi-structured questionnaires were developed for FGDs.

Inclusion criteria. Primary school students who received WFP food supplement for at least 6 months. **Exclusion criteria.** Critically ill beneficiaries. **Sample size.** Sample size was calculated on the basis of the formula of a single cross-sectional survey comparing two sub-groups (Kelsey, 1996). The design effect was assumed at 1.5 as the population was relatively homogenous within each defined stratum. Non-response rate was assumed to be at 10% for all parameters, except for KAP that is estimated at 2%. The sample size for anemia of the survey subjects

was calculated using a method for comparing two cross-sectional surveys (2nd follow-up survey in 2008 versus baseline survey in 2006) at a significant level of 95% and 80% power.

Statistical analysis. Data was analyzed using SPSS for Windows version 15. Data were checked for accuracy and consistency by the field supervisors. The normality of hemoglobin, data distribution was checked using the Kolmogorov-Smirnov test (Brown JR, 2008). Hemoglobin data was presented in mean and standard deviation – SD (for normally distributed data) or in geometric mean (for not-normal distributed data). Categorical data was presented in a descriptive style. All data were presented for all areas (total) as well as breakdown by areas (i.e. Province: NTB and NTT) and by the surveyed subject. Data analysis. The data analyisis was conducted under the following phases i.e.: multi-level data checking, data coding, data entry and cleaning. The main parameters (such as micronutrient status and health status) from the survey were compared with that of the previous follow-up surveys carried out in the year 2007 in the same area, to assess the magnitude of changes using relative risk with Chi-square test.

Ethical approval. The survey was conducted after receiving an approval from a local Ethical Committee. Permission was obtained from the local authorities (District health office/ Dinas Kesehatan), district/ municipality office (sub-district/ village), Primary Health Center (Puskesmas), school administrator. Samples were assessed only after they give their informed consent. The participation of the respondents was voluntary. Data were treated confidentially and used only for the survey purposes.

Limitations of the survey. Lists of WFP villages provided by WFP offices were not up-to-date and in some locations, different from what was found in the field. Therefore, some adjustments were carried out.

RESULTS

General and demographic characteristics

A sum of 692 students was surveyed. Knowledge Attitude and Practice (KAP) Assessment was done in 300 students of Grade 4–6. Boys and girls were equally distributed.

Educational level of students' parents. Parents with no schooling were 13.3% of mothers and 10.7% of fathers. There were 45.3% of mothers and 34.3% of fathers who finished Elementary School. Junior High schools were completed by 20.0% mothers and 23.3% fathers. Senior High School was completed by 11.0% mothers and 21.3% fathers. In general, fathers had a higher education than mothers.

Main occupation of student's parents. They sold agriculture products (32%), worked as unskilled agricultural laborers (26.3%) and became government employee (9.0%). About a half of them had a second source of income.

Place for defecation, type of housing and construction of households of the students. 71% of students used latrine at home (NTB 51.6% and NTT 92.9%). The rest of them used field (17.3%), river/ lake/ pond (9.3%) for place for defecation. Students

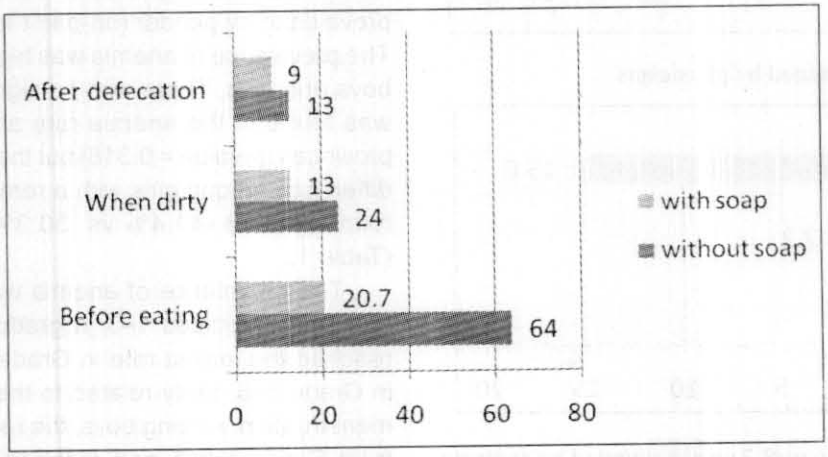

Figure 1. Handwashing practice among students (%)

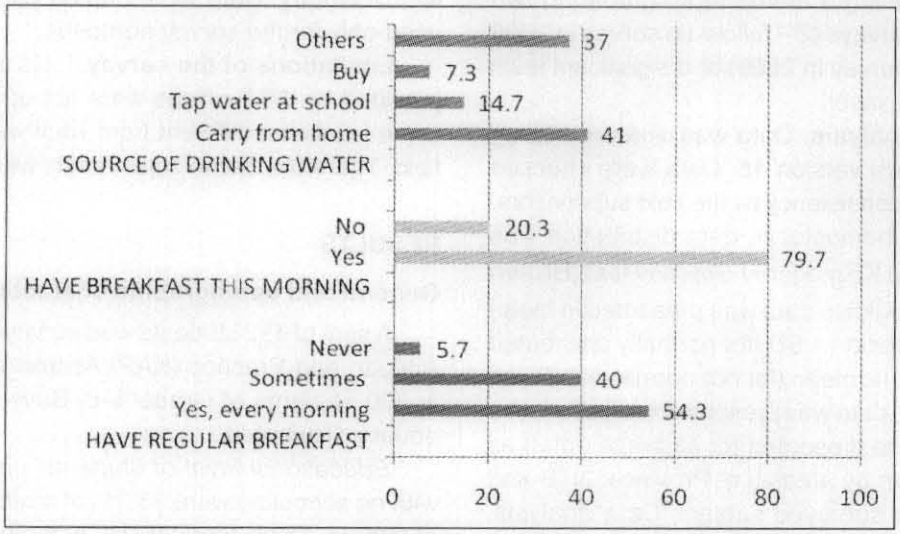

Figure 2. Source of drinking water and having regular breakfast (%)

that stay in a single house were 94.3% at NTB and 93.6% at NTT. Materials for the house were permanent (40.3%), semi-permanent (39.7%) and non permanent (20.0%). Fuels used were mainly woods (76.3%) and kerosene (18.3%). The main water sources were protected well 54%, spring water 20%, unprotected well 10.3%, tap water 10.0% and river/ lake 2.0%.

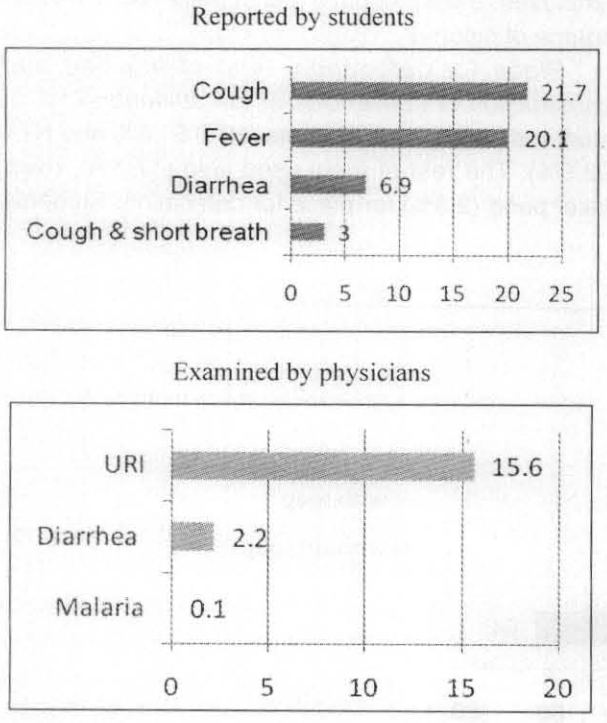

Figure 3. Illness in the past 2 weeks reported by students and as examined by Physicians (%)

Health conditions and anemia

School attendance. The attendance rate of the last two weeks was reported at 87% among all surveyed students. *Hemoglobin distribution among boys and girls.* There was no difference between hemoglobin concentration found by area and by gender. The mean Hemoglobin was calculated at 11.8 (95% CI: 9.3 – 14.3). The mean hemoglobin of boys was 11.8 gr/ dl (SD 1.3; CI (11.6 – 11.9)) and the mean hemoglobin of girls was 11.8 gr/ dl (SD 1.3; CI (11.7 – 11.9)).

The anemia rate was 37.6% among all students. There was no significant difference in anemia prevalence by gender (un-pair t-test, p-value 0.854). The prevalence of anemia was higher at NTB for both boys and girls. There was no significantly difference was found in the anemia rate among boys in both provinces (p-value = 0.318) but there was a significant difference among girls with a remarkably higher rate found in NTB (41.4% vs. 30.3%, p-value = 0.02) (Table 1).

The prevalence of anemia was high among girl students of grades 1–3. It gradually reduced, and reached the lowest rate in Grade 4, then increased in Grade 5–6, likely related to the beginning of their menstruation. Among boys, the rate steadily reduced from Grade 1 to 6 and reached the lowest rate in Grade 6. The difference of anemia prevalence rates

Table 1. Anemia among students by gender and province

		NTB		NTT		Total	
		n	%	n	%	N	%
Boys	Hb>11.5	109	59.6	99	62.7	208	61.0
	Hb<11.5	74	40.4	59	37.3	133	39.0
	Total	183	100.0	158	100.0	341	100.0
						p-value	0.318
Girls	Hb>11.5	109	58.6	115	69.7	224	63.8
	Hb<11.5	77	41.4	50	30.3	127	36.2
	Total	186	100.0	165	100.0	351	100.0
						p-value	0.020
Total	Hb>11.5	218	59.1	214	66.3	432	62.4
	Hb<11.5	151	40.9	109	33.7	260	37.6
	Total	369	100.0	323	100.0	692	100.0
						p-value	0.031

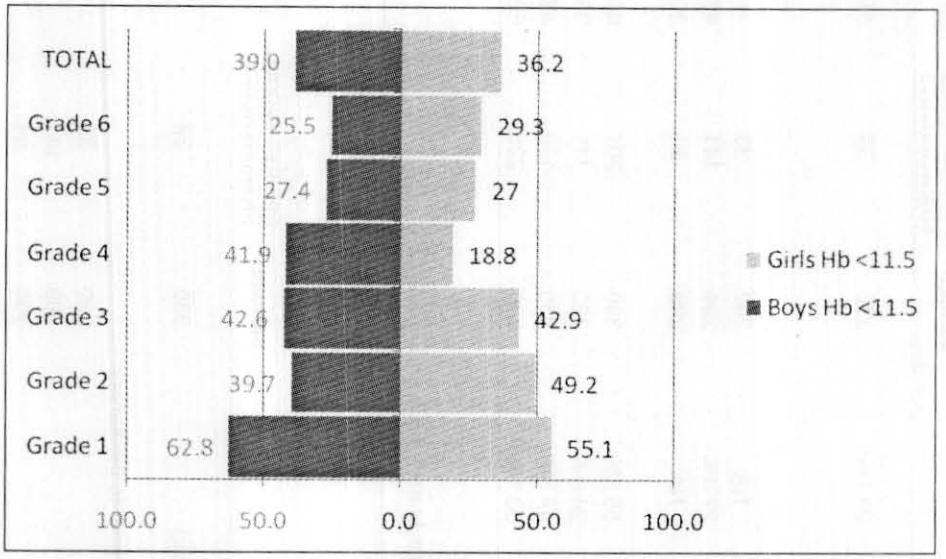

Figure 4. Anemia among students by gender and grades

between grades were significant in boys as well as in girls (p-value = 0.002 and 0.0001, respectively) (Figure 4).

The prevalence of anemia in this study was significantly higher as compared to 2007 survey and 2006 baseline survey. The OR between follow-up survey 2008 and follow-up survey 2007 was = 4.5, 95% CI = 3.1–6.5. The prevalence of diarrhea, ARI and fever was significantly lower at follow-up study 2008 as compared to the same time period in 2006 and 2007 (Table 2). This may suggest some improvement in the child's resistance to infections and their health status.

Table 3 shows the OR of survey 2007 and 2008. We cannot do the same analysis using baseline data since we do not have the real number of the specific survey. After having the calorie and micronutrient intervention the anemia rates increased substantially after one year, while the morbidity rate of diarrhea, ARI and fever went down. The hygiene practices among the school children after one year varies. Those who reported drink boiled water and did hand washing after defecation decreased substantially, while those who did hand washing before meals increased substantially.

Table 2. Compilation WFP- NRP survey in 2006 (Baseline), 2007 (Follow-up 1) and 2008 (Follow-up 2)

No.	Variables	Base line (2006) at MADURA, NTB, NTT	Follow-up 1 (2007) at MADURA, NTB, NTT			Follow-up 2 (2008) at NTB, NTT		
		Percent	Total sample	No subjects with positive survey characteristics	Percent	Total sample	No subjects with positive survey characteristics	Percent
	Anemia rates:							
1.	Anemia among primary school students (Hb<11.5g/L)	23.1%	330	39	11.8%	692	260	37.6%
2.	Morbidity among primary school students (2 weeks prior to the survey):							
	2.1. Diarrhea	NA	299	33	11.0%	692	48	6.9%
	2.2. Acute Respiratory Infections (ARIs)	27.3%	299	141	47.2%	692	150	21.7%
	2.3. Fever	NA	299	91	30.4%	692	139	20.1%
3.	Hygiene practices among school students:							
	3.1. Drinking boiled water	55.8%	330	201	60.9%	300	123	41.0%
	3.2. Hand washing before meals	24.0%	330	111	33.6%	300	192	64.0%
	3.3. Hand washing after defecation	44.8%	330	159	48.2%	300	39	13.0%
	3.4. Use latrine for defecation	53.1%	330	225	68.2%	300	213	71.0%

Table 3. OR of WFP- NRP survey 2007 (Follow-up 1) and 2008 (Follow-up 2)

		Follow-up 1 (2007) at MADURA, NTB, NTT		Follow-up 2 (2008) at NTB, NTT		OR	95% CI	
		Total sample	No of subjects with positive survey characteristics	Total sample	No of subjects with positive survey characteristics			
1.	Anemia rates:							
	Anemia among primary school students (Hb<11.5g/L)	330	39	692	260	4.5	3.1	-6.5
2.	Morbidity rates:							
	Morbidity among primary school students 2 weeks prior to the survey							
	2.1. Diarrhea	299	33	692	48	0.6	0.4	-1.0
	2.2. Acute Respiratory Infections (ARIs)	299	141	692	150	0.3	0.2	-0.4
	2.3. Fever	299	91	692	139	0.6	0.4	-0.8
3.	Hygiene practices among school students:							
	3.1. Drinking boiled water	330	201	300	123	0.5	0.3	-0.6
	3.2. Hand washing before meals	330	111	300	192	3.5	2.5	-4.9
	3.3. Hand washing after defecation	330	159	300	39	0.2	0.1	-0.2
	3.4. Use latrine for defecation	330	225	300	213	1.1	0.8	-1.6

DISCUSSION

The respondents were low-middle income families. Their parents' education was generally elementary school and their parents' income was mostly related to agriculture. Almost all of them stay in single housing that was made from permanent or semi permanent materials. The majority of the households used latrine for defecation. About two third of the students had relatively safe water sources for their drinking water. Contaminated drinking water contributes to disease in developing and developed countries worldwide. The risks arise from *infectious agents*, *toxic chemicals* and *radiological hazards*. It is important to have sufficient and good quality of drinking water (WHO, 2010). Parents should more actively participate and contribute to the program by providing proper drinking water or other liquids for their children, not just request WFP to provide drinks at school.

Figure 1 shows the percentage of students who practice hand washing before eating when their hands were dirty and after defecation with or without soap. In a setting in which diarrhea is a leading cause of child death, improvement in hand washing in the household reduced the incidence of diarrhea among children at high risk of death from diarrhea (Lubby SP, 2004). Hand washing using soap prevents the two clinical symptoms that cause the largest number of childhood deaths i.e.: diarrhea and acute lower respiratory infections (Lubby SP, 2005).

Almost 80% of the students had breakfast during the study, but only about a half of them had regular breakfast (Figure 2). Breakfast could supplies one fourth of the Recommended Daily Allowances a child needs (Parents, 2010). Studies shows that children who had breakfast were better in math (Wyon D, 1997), attendance and punctuality (Murphy JM, 1998 and Powell CA 1998), they improves their speed and memory in cognitive tests (Grantham-McGregor, 1998 and Chandler AMK, 1998 and Wesnes KA, 2003). Thus, having breakfast every morning is important for students. Information gathered from focus group discussions stated that parents who were not able to provide breakfast for their children were grateful for the WFP school feeding program. Besides, they also recommended adding drinking water or milk in the package to avoid students from drinking tap water or obtained it from other sources. This may indicate a certain level of dependency of parents and students on the biscuits given at school. They are likely unaware of the importance of breakfast and role of biscuits, and hence, skip regular breakfast. This improper practice should be reduced through enhanced HNE. Parents should cook and encourage the students to have breakfast before going to schools, and biscuits should be regarded as an additional supplement to get extra energy and micronutrients for students.

Diarrhea in the past two weeks that was reported by students was higher than that was diagnosed by the physicians (Figure 3). The cause were difference in time period, besides diarrhea that was observed by physicians could possibly be underreported since those with moderate and especially heavy diarrhea were certainly unable to go to school. The percentage of cough as reported by the students was practically similar to what was reported by the physicians.

Anemia is a frequent manifestation and an important health problem. Anemia is frequently found and it is a persistent public health problem in Indonesia. Among the three studies, the last study had the highest prevalence of anemia (Table 2). The reasons were not clear. The interventions among the students were just the same during these years, i.e. biscuits and nutrition and health education, but we did not have the socioeconomic data of their parents. Possibly the parents socioeconomic conditions became lower during the past years. Anemia is estimated to affect one-half of school-age children in developing countries. The school years are an opportune time to intervene, and interventions must be based on sound epidemiologic understanding of the problem in this age group (Stolzfus, 1997).

RECOMMENDATIONS

Nutrition education and promotion. HNE should be intensified using various communication channels and focus on school children and their family (mothers, fathers, grandparents, village associations, village and religion leaders, etc.). Information-Education-Communication (IEC) materials are needed for a better understanding of nutrition and health topics to be discussed. It is encouraged to develop own IEC local materials and use interactive methods. HNE should focus on diversified and balanced diet, proper feeding practices, importance of breakfast for students before going to schools, avoiding unhealthy snacks, proper consumption of fortified biscuits and

noodles, reducing the sharing fortified foods and personal hygiene.

Drinking safe water for students. Students, their family including villagers should be encouraged to practice and drink boiled water. Drinking water during class and in the breaks is very important. Students should be encouraged to carry boiled water from home to school.

Food aids. The increased prevalence anemia in 2008 among the targeted beneficiaries, despite they have received fortified foods for some time, unpredictable financial and food prices which may cause a further deterioration of household food security in the next years indicate that micronutrient deficiencies and anemia are likely prevalent and there is a need for fortified foods. Thus, it is recommended to continue the fortified foods at least until a national policy on home fortification (sprinkles) is launched by the MoH and implemented in the currently targeted areas. The current fortified foods, however, should be considered as a short-term assistance only. For the long run, more sustainable food baskets using locally available foods should be explored and piloted under the leadership, coordination and contribution of the local government, with active participation of the community. School canteens, in line with the MoE's policy, to provide simple school snacks or hot meals (rice, bean/ vegetable soup) should be piloted in schools.

Food aid monitoring. Significantly reduce the relatively high sharing rates of the fortified biscuits, by reminding them that those food aids should be just for the students because they need more vitamins and minerals during their fast growing period, not others.

Improved household food security. Depending on resources, it is recommended to stronger promote sustainable livelihood support activities such as food-for-work (FFW) to increase food production and household food security among the poor households. FFW should be closely collaborated with local technical institutions, and implemented under the leadership of local government, and owned by villages. School gardening can be a good FFW activity to be promoted to create a good example of diet diversification for students and other villagers, and provide fresh good foods (beans, vegetables) for school canteens. Provide healthy snacks comprising indigenous products from local farmers, fruits can be considered.

Promote healthy nutrition in school. Provide health education to help students acquire knowledge, attitudes, beliefs and skills which are needed to make informed decisions, practice healthy behaviors and create conditions that are conducive to health; provide school food programs to increase the availability of healthy food in schools (e.g. breakfast, lunch and/or snacks at reduced price); ensure that food served in schools adheres to minimum nutrition standards; use school gardens as a tool to develop awareness about food origins; promote parental involvement (WHO, 2006).

Anemia. Production and consumption of foods rich in micronutrients such as iron, folic acid, vitamin C, carotenes, etc. should be identified and strongly promoted at the household and village level. If it is affordable good quality foods from animal source such as liver and meat should be included. Encourage the respondents to take iron pills/ syrup under the supervision of the health personnel. In order to analyze possible relationships between nutrition (anemia rate) and household food security, key food insecurity indicators such as food consumption, food expenditure, food sources, coping strategies are suggested to be included in the next survey. This would also help monitor the impact of unpredictable financial and food situation in the years to come. If food for school feeding is bought locally than it can potentially be a force multiplier, benefiting both children and the local economy.

ACKNOWLEDGEMENT

We would like to thank WFP in Indonesia for their technical and financial support. The collection and analysis of the data could have been difficult without the efforts of the team composed of several colleagues at the NIHRD, MoH Republic of Indonesia, NTB and NTT District Health Office. Finally, we thank all enumerators and respondents who allocated their time for this study.

Conflict of interest: none declared.

REFERENCES

Akhtar K, Sherwani RK, Rahman K, Hasan J and Shahid M, 2008. HemoCue photometer: a better alternative of hemoglobin estimation in blood donors? In Indian Journal of Hematology and Blood Transfusion 24(4):

170-2. Available from: http://www.springerlink.com/content/b1309h2488n088p1. Accessed: 6 January 2009

Brown JR, Harvey ME (2008). "Rational Arithmetic Mathematica Functions to Evaluate the Two-Sided One sample K-S Cumulative Sample Distribution." Journal of Statistical Software, 26(2): 1–40. URL http://www.jstatsoft.org/v26/i02.

Chandler AMK, Walker SP, Connolly K, Grantham-McGregor SM, 1995. "School Breakfast Improves Verbal Fluency in Undernourished Jamaican Children". Journal of Nutrition; 125(4): 894–900.

Coggon, Rose, and Barker, 1997. Epidemiology for the Uninitiated, Chapter 8, "Case-control and cross-sectional studies", BMJ (British Medical Journal) Publishing.

Gelli A, Meir U, and Espejo F, 2007. Does provision of food in school increase girls' enrollment? Evidence from schools in sub-Saharan Africa. Food and Nutrition Bulletin, vol. 28, no. 2 © 2007, The United Nations University.

Grantham-McGregor S, Chang S, Walker S, 1998. "Evaluation of School Feeding Programs: Some Jamaican Examples." American Journal of Clinical Nutrition; 67(4): 785S–789S.

Kelsey JE, Whittemore AS, Evans AS, and Thompson D, 1996. Methods in Observational Epidemiology, 2nd edition. New York: Oxford University Press.

Kristjansson B, Petticrew M, MacDonald B, Krasevec J, Janzen L, Greenhalgh T, et al., 2007. School feeding for improving the physical and psychosocial health of disadvantaged students. Cochrane Database of Systematic Reviews, Issue 1. Art. No.: CD004676. DOI: 10.1002/14651858.CD004676.pub2.

Luby SP, Agboatwalla M, Feikin DR, Painter J, Billhimer W, Altaf A, Hoekstra RM, 2005. Effect of hand washing on child health: a randomized controlled trial. Lancet. Jul 16–22; 366(9481): 225–33.

Luby SP, Agboatwalla M, Painter J, Altaf A, Billhimer WL, Hoekstra RM, 2004. Effect of intensive hand washing promotion on childhood diarrhea in high-risk communities in Pakistan: a randomized controlled trial. JAMA. Jun 2; 291(21): 2547–54.

Murphy JM, Pagano M, Nachmani J, Sperling P, Kane S, Kleinman R, 1998. "The Relationship of School Breakfast to Psychosocial and Academic Functioning: Cross-sectional and longitudinal observations in an inner-city sample". Archives of Pediatric and Adolescent Medicine; 152: 899–907.

Parents, Family Guide to Healthy Eating, 2010, School breakfast, Fast and Healthy Food for Thought, Available from: http://www.nutritionexplorations.org/parents/school-breakfast.asp, Accessed: March 26, 2010.

Powell CA, Walker SP, Chang SM, Grantham-McGregor SM, 1998. "Nutrition and education: a randomized trial of the effects of breakfast in rural primary school children." American Journal of Clinical Nutrition; 68: 873–9.

Stoltzfus RJ, Chwaya HM, Tielsch JM, Schulze KJ, Albonico M and Savioli L, 1997. Epidemiology of iron deficiency anemia in Zanzibari schoolchildren: the importance of hookworms. American Journal of Clinical Nutrition, 65: 153–159, Copyright © by The American Society for Clinical Nutrition, Inc.

Wesnes KA, Pincock C, Richardson D, Helm G, Hails S, 2003. "Breakfast reduces declines in attention and memory over the morning in schoolchildren." Appetite; 41(3): 329–31.

World Health Organization (WHO), 2001. Iron deficiency anemia. Assessment, prevention and control. A guide for programme managers, UNICEF, UNU, WHO, Geneva.

World Health Organization (WHO), 2006. Meeting the MDG Drinking Water and Sanitation Target. The Urban and Rural Challenge of the Decade, Available from: http://www.who.int/dietphysicalactivity/childhood_schools/en/, Accessed: March 26, 2010.

World Health Organization (WHO), 2010. Health through safe drinking water and basic sanitation, Water Sanitation and Health (WSH), available at: http://www.who.int/water_sanitation_health/mdg1/en/index.html. Accessed: May 1, 2010.

Wyon D, Abrahamsson L, Jartelius M, Fletcher R, 1997. "An Experimental Study of the Effects of Energy Intake at Breakfast on the Test Performance of 10 Year-Old Children in School." International Journal of Food Science and Nutrition; 48(1): 5–12.

THE EFFECT OF ORGANISATION CULTURE TOWARDS HEALTH WORKERS PERFORMANCE IN SUPPORTING THE ACHIEVEMENTS OF VISION, MISSION AND GOALS OF HEALTH CENTERS (*IN DISTRICT OF JOMBANG, EAST JAVA PROVINCES, INDONESIA*)

Niniek L Pratiwi, Umi M, Setya Pranata and **Ni Ketut Aryastami**[1]

ABSTRACT

Background: *This study analyzes influences of working culture on health center staffs in achieving the performances based on tasks and functions. These can be achieved by six minimum or essential standard services as: curative care, maternal and child and also family planning cares, nutrition program, health promotion, environmental health, and communicable disease control. They were added by a developmental program specific in the study areas, such as dental care.* ***Methods:*** *The study method was observational with a retrospective design. The health centers were randomly clustered, and 15 health workers selected based on the availability of Islamic dorms. From the criteria, it was selected 8 health centers with the Islamic dorms under their working areas, and the rest 7 health centers having no Islamic dorm. Samples are the health staffs under the programs being studied as well as the one on development program as the dental care. In this study, respondents were taken 10 staffs in each health center representative of the 6 minimal health services and the development programs. Data were collected by questionnaire byself. Methode of observation on effective time used by health centers staffs were just done in 4 health centers that equally distributed in the two different locations according to the criteria.* ***Results:*** *Data showed that there was significant difference (p=0.041) between working culture and staff performances according to tasks and functions in achieving vision and mission of the health centers. The conclusion relationship of working culture having good score was pictured staff good behaviors in delivering health care. It is expected that health centers could implement ideal organization culture to achieve the best staff performances.*

Key words: *work culture, health center, performances*

ABSTRAK

Penelitian ini mengkaji pengaruh budaya kerja petugas kesehatan puskesmas dalam mencapai kinerja petugas berdasarkan tugas pokok dan fungsi puskesmas yang dicapai melalui 6 upaya kesehatan wajib yang terdiri dari: upaya pengobatan, Kesehatan Ibu dan Anak/Keluarga Berencana, Gizi, Promosi Kesehatan, Kesehatan Lingkungan, dan Pemberantasan penyakit menular. Upaya kesehatan pengembangan yang terpilih adalah upaya kesehatan gigi. Penelitian ini merupakan penelitian observational dengan rancangan retrospektif, dilakukan di 15 wilayah puskesmas di kabupaten Jombang. Terpilih 8 puskesmas dengan wilayah puskesmas dengan pesantren dan 7 puskesmas tanpa wilayah pesantren. Sampel penelitian adalah petugas puskesmas yang menangani 6 upaya kesehatan wajib dan 1 upaya kesehatan pengembangan yaitu upaya kesehatan gigi. Dalam studi ini, responden diambil 10 staf di masing-masing puskesmas perwakilan dari 6 minimal pelayanan kesehatan dan program pengembangan. Kuesioner terstruktur diisi sendiri oleh petugas kesehatan. Metode observasi dengan pemanfaatan waktu yang efektif dilakukan oleh peneliti di 4 puskesmas yaitu 2 puskesmas dengan wilayah pesantren dan 2 puskesmas tanpa pesantren. Hasil penelitian menunjukkan bahwa ada hubungan secara bermakna p=0,041 (p<0,05, α 0,05) antara budaya kerja terhadap kinerja petugas kesehatan sesuai tugas pokok dan fungsi dalam mencapai visi, misi puskesmas. Hubungan budaya kerja dengan nilai sangat baik akan diikuti oleh perilaku petugas kesehatan dalam menjalankan tugas sesuai tupoksi yang tercermin dan berperan dalam penampilan kinerjanya. Dengan demikian diharapkan puskesmas di masa mendatang dapat menciptakan budaya kerja yang mendekati ideal untuk dapat mencapai kinerja perugas kesehatan yang diharapkan.

Key words: *work culture, health center, performances*

Submit: 8 April 2010, Review 1: 9 April 2010, Review 2: 9 April 2010, Eligible articles: 17 April 2010

[1] Center of Health System and Policy Research and Development, NIHRD Ministry of Health at the Republicv Indonesian Address: Indrapura No. 17, Surabaya 60176, Indonesia.
Correspondence: E-mail:niniekpratiwi@yahoo.com